UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,727	10/28/2003	Craig M. Carpenter	MI22-2433	5546

21567 7590 04/27/2005

WELLS ST. JOHN P.S.
601 W. FIRST AVENUE, SUITE 1300
SPOKANE, WA 99201

EXAMINER	
MOORE, KARLA A	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,727	CARPENTER ET AL.	
	Examiner	Art Unit	
	Karla Moore	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *76-109* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *76-91,93-106,108 and 109* is/are rejected.

7)☒ Claim(s) *92 and 107* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5 total*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 76-94 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 76-94 recite the limitation "...*the passageway* which extends to diametrically opposing portions of the perimeter...". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims **76-77, 80 and 86-88** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,089,543 to Freerks in view of U.S. Patent No. 5,223,113 to Kaneko et al. and U.S. Patent No. 5,484,483 to Kyogoku.

5. Freerks discloses a semiconductor substrate processing chamber and accessory attachment interfacial structure substantially as claimed and comprising: a body (Figures 3 and 6, 28, 30, 32, 34) sized and shaped to engage between a semiconductor substrate processing chamber (Figure 1, 14) and an accessory attachment (Figure 1, 12) which is exposed to the processing chamber, the body having first and second faces; the body comprising an external perimeter extending between the first and second faces; and the body comprising a volume in at least one cross section region which extends to diametrically opposing portions of the perimeter.

6. However, Freerks et al. fail to teach the body comprising a volume in at least one cross section region, at least a majority of said cross sectional region constituting a mass of substantially non-metallic

and thermally insulative material, the mass being sufficient to effectively reduce heat transfer between the semiconductor processing chamber and the accessory attachment when so engaged than would otherwise occur in the absence of said mass of material when so engaged.

7. Kaneko et al. teach the use of ceramic material at a peripheral portion of a contacting interface between two chambers for purpose of providing excellent heat insulation, which enables power consumption of the heater (in a processing chamber) to be made smaller and the temperature control of the process chamber to be made easier (column 2, rows 45-48; column 5, rows 44-46; column 7, rows 38-44; and column 8, rows 6-14). Kaneko teaches the use of a clearance (Figure 5, C1) the ceramic, insulating material for the purpose of preventing contact between two metallic surfaces, thus allowing heat to be transferred only through convection (column 7, rows 45-54).

8. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided non-metallic, thermally insulating material peripheral to a metallic passageway in Freerks in order to provide excellent heat insulation, enabling power consumption of the heater (in a processing chamber) to be made smaller and the temperature control of the process chamber to be made easier as taught by Kaneko et al. It would have been further obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a clearance created by ceramic, insulating material in Freerks in order to prevent any heat transfer other than by convection as taught by Kaneko et al.

9. Freerks and Kaneko et al. disclose the invention substantially as claimed and as described above.

10. However, Freerks and Kaneko et al. fail to teach the accessory attachment as something other than a transfer chamber that attaches with a housing of a processing chamber and communicates with the chamber.

11. Kyogoku teach the use of an accessory attachment interfacial structure (Figure 3, 8; column 3, ow 55 through column 4, row 3) between a processing chamber and a vent line for the purpose of insulating before and after the vent for the purposes of preventing heat from escaping and improving the average thermal characteristic of a heating unit.

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an accessory interfacial structure in an apparatus such as the one described in Freerks and Kaneko et al. for insulating between a processing chamber and a vent in order to prevent heat from escaping and to improve the average thermal characteristic of a heating unit as taught by Kyogoku.

13. With respect to claim 77, the mass of material of Kaneko et al. comprises openings extending through the mass of material for fixedly attaching the mass of material (column 5, rows 44-51).

14. With respect to claim 80, Kaneko et al. teach the insulating material as ceramic (column 7, rows 36-38).

15. With respect to claims 86 and 87, the prior art does not disclose a specific value for the depth of the cross-sectional region. However, it would have been obvious to one of ordinary skill in the art to optimize the value based on a number of apparatus variables, such as the material used for the structure, the heating temperature in the processing chamber and the size of the processing and transfer chambers. One of ordinary skill in the art would have worked to find a value that was large enough that proper isolation was ensured, but not so large that the size of the apparatus was unduly increased, leading to a larger apparatus than needed and thus increased costs.

16. With respect to claim 88, Freerks fails to teach the body comprising a greater volume of substantially non-metallic material and thermally insulative material than of substantially metallic material.

17. Kaneko et al. teach that the heat transmitted through the non-metallic material is smaller than the heat transmitted through metal.

18. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a greater volume of non-metallic material than metallic material to take advantage of this property as taught in Kaneko et al.

19. Claim **78** is rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 76-77, 80 and 86-88 above, and further in view of U.S. Patent No. 6,263,829 to Schneider et al.

20. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

21. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as polymeric.

22. Schneider et al. teach the use of polymeric material as a construction material for a processing chamber where high temperatures and a harsh chemical environment are present (column 6, rows 40-42).

23. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a polymeric material as the non-metallic, thermally insulative in material Freerks, Kaneko et al. and Kyogoku in order to take advantage of the materials suitability for use at high temperatures and in harsh chemical environments as taught by Schneider et al.

24. Claim **79** is rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 76-77, 80 and 86-88 above, and further in view of Japanese Patent No. 08-034678 A to Sonoda et al.

25. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

26. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as a gel.

27. Sonoda et al. teach the use of a gel material for the purpose of taking advantage of its heat insulating properties and good mechanical strength (abstract).

28. It would have been obvious to one ordinary skill in the art at the time the Applicant's invention was made to have provided a gel material as the non-metallic, thermally insulative material in Freerks, Kaneko et al. and Kyogoku in order to take advantage of the materials heat insulating properties and good mechanical strength as taught by Sonoda et al.

29. Claims **81-82** are rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 76-77, 80 and 86-88 above, and further in view of Japanese Patent Publication No. 2001-261375 to Sato et al.

30. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

31. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as porous or glass.

32. Sato et al. teach the use of a material comprising glass and which is porous for the purpose of obtaining a heat insulating material with excellent chemical resistance and excellent handleability suitable for use in semiconductor production (Japanese and Derwent abstracts).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a material comprising glass and which is porous Freerks, Kaneko et al. and Kyogoku in order to obtain a heat insulating material suitable for use in semiconductor production as taught by Sato et al.

34. Claim **83** is rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 76-77, 80 and 86-88 above, and further in view of U.S. Patent No. 5,626,936 to Alderman.

35. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

36. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as at least two of solid, liquid and gas.

37. Alderman teaches the use of a construction material containing both liquid and solid phases for the purpose of avoiding exposure of an interior space from much higher or much lower temperatures of an exterior surface, thereby reducing the power requirements to maintain the desired temperature within the interior space (abstract).

38. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a two-phase, solid and liquid material as the non-metallic, thermally insulative material in Freerks, Kaneko et al. and Kyogoku in order to isolate two regions with differing temperatures, thus, reducing the power requirement to maintain a desired temperature in either of the regions as taught by Alderman.

39. Claims **84 and 85** are rejected under 35 U.S.C. 103(a) as being unpatentable Freerks, Kaneko et al. and Kyogoku as applied to claim 76-77, 80 and 86-88 above, and further in view of U.S. Patent No. 6,045,620 to Tepman et al.

40. However, Freerks, Kaneko et al. and Kyogoku fail to teach a sealant channel comprising a sealant channel/o-ring groove peripherally surrounding the passageway.

41. Tepman et al. teach the use of a sealant channel/0-ring groove (Figures 5 and 6, 82; column 6, rows 2-5) on a substantially metallic insert (31) received within a passageway, the insert defining a substrate passageway there through, where the purpose of the sealant channel/o-ring groove is forming a seal between a process chamber and the metallic insert.

42. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a sealant channel/o-ring groove in Freerks, Kaneko et al. and Kyogoku in order to form a seal between a process chamber and a metallic insert as taught by Tepman et al.

43. Claims **89-91 and 93-94** are rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 76-77, 80 and 86-88 above, and further in view of U.S. Patent No. 6,045,620 to Tepman et al. and U.S. Patent No. 4,289,061 to Emmett.

44. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

45. However, Freerks, Kaneko et al. and Kyogoku fail to teach the interfacial structure comprising a plurality of openings for receiving load bearing plugs.

46. Tepman et al. teach the use of a plurality of openings and supplying a plurality of screws to those openings in order to attach the interfacial structure to a transfer chamber (column 5, rows 35-36).

47. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a plurality of openings and to have supplied a plurality of screws to those openings in Freerks, Kaneko et al. and Kyogoku in order to attach an interfacial structure to a transfer chamber as taught by Tepman et al.

48. Freerks, Kaneko et al., Kyogoku and Tepman disclose the invention substantially as claimed and as described above.

49. However, Freerks, Kaneko et al., Kyogoku and Tepman fail to teach the body comprising load bearing plugs within at least some of the openings in the thermally insulative material, the load bearing plugs having greater compression strength than the thermally insulative material and at least some of the load bearing plugs comprising holes extending therethrough which are sized to received mounting bolts.

50. Emmett teaches the use load bearing plugs (Figure 1, 2) including a hollow portion sized to receive mounting bolts (20) where the purpose of the hollow portion is to absorb a substantial amount of the total load applied by the plug (column 2, rows 41-49).

51. It would have been obvious to one of ordinary skill in art at the time the Applicant's invention was made to have provided at least some of load bearing plugs with a hollow portion in Freerks, Kaneko et al. and Tepman in order to absorb a substantial amount of the total load applied by the plug as taught by Emmett.

52. With respect to claim 90, Tepman teaches the use of entirely solid load bearing plugs/screws.

53. With respect to claim 91, as noted above, Emmett teaches the use of load bearing plugs including a hollow portion.

54. With respect to claim 93, the body of both Freerks and Tepman et al are substantially rectangular having outermost corners, at least four of said openings and load bearing plugs being respectively proximate the outermost corners of Tepman et al.

55. With respect to claim 94, said four load bearing plugs of Tepman et al. are solid.

56. Claims **95-96 and 99** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,089,543 to Freerks in view of U.S. Patent No. 5,223,113 to Kaneko et al. and U.S. Patent No. 5,484,483 to Kyogoku.

57. Freerks discloses a semiconductor substrate processing chamber and accessory attachment interfacial structure substantially as claimed and comprising: a body (Figures 3 and 6, 28, 30, 32, 34) sized and shaped to engage between a semiconductor substrate processing chamber (Figure 1, 14) and an accessory attachment (Figure 1, 12) which is exposed to the processing chamber, the body comprising a total volume.

58. However, Freerks fails to teach at least a majority of the total volume being a mass of material that is substantially non-metallic and thermally insulative, the mass being sufficient to effectively reduce heat transfer between the semiconductor processing chamber and the accessory attachment when so engaged than would otherwise occur in the absence of said mass of material when so engaged.

59. Kaneko et al. teach the use of ceramic material portion of a contacting interface between two chambers for purpose of providing excellent heat insulation, which enables power consumption of the heater (in a processing chamber) to be made smaller and the temperature control of the process chamber to be made easier (column 2, rows 45-48; column 5, rows 44-46; column 7, rows 38-44; and column 8, rows 6-14). Kaneko teaches the use of a clearance (Figure 5, C1) the ceramic, insulating material for the purpose of preventing contact between two metallic surfaces, thus allowing heat to be transferred only through convection (column 7, rows 45-54). With the combination of Freerks and Kaneko et al., the body further comprises a volume in at least one cross sectional region transverse the passageway which extends to diametrically opposing portions of the perimeter, at least a majority of said cross sectional region constituting a substantially non-metallic and thermally insulative material (see Figure 6). Kaneko et al. teach that the heat transmitted through the non-metallic material is smaller than the heat transmitted through metal.

60. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided non-metallic, thermally insulating material in Freerks in order to provide excellent heat insulation, enabling power consumption of the heater (in a processing chamber) to be made smaller and the temperature control of the process chamber to be made easier as taught by Kaneko et al. It would have been further obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a greater volume of non-metallic material than metallic material to take advantage of this property as taught in Kaneko et al.

61. Freerks and Kaneko et al. disclose the invention substantially as claimed and as described above.

62. However, Freerks and Kaneko et al. fail to teach the accessory attachment as something other than a transfer chamber that attaches with a housing of a processing chamber and communicates with the chamber.

63. Kyogoku teach the use of an accessory attachment interfacial structure (Figure 3, 8; column 3, row 55 through column 4, row 3) between a processing chamber and a vent line for the purpose of insulating before and after the vent for the purposes of preventing heat from escaping and improving the average thermal characteristic of a heating unit.

64. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an accessory interfacial structure in an apparatus such as the one described in Freerks and Kaneko et al. for insulating between a processing chamber and a vent in order to prevent heat from escaping and to improve the average thermal characteristic of a heating unit as taught by Kyogoku.

65. With respect to claim 96, the mass of material of Kaneko et al. comprises openings extending through the mass of material for fixedly attaching the mass of material (column 5, rows 44-51).

61. With respect to claim 99, Kaneko et al. teach the insulating material as ceramic (column 7, rows 36-38).

66. Claim **97** is rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 95-96 and 99 above, and further in view of U.S. Patent No. 6,263,829 to Schneider et al.

67. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

68. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as polymeric.

69. Schneider et al. teach the use of polymeric material as a construction material for a processing chamber where high temperatures and a harsh chemical environment are present (column 6, rows 40-42).

70. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a polymeric material as the non-metallic, thermally insulative in material Freerks, Kaneko et al. and Kyogoku in order to take advantage of the materials suitability for use at high temperatures and in harsh chemical environments as taught by Schneider et al.

71. Claim **98** is rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 95-96 and 99 above, and further in view of Japanese Patent No. 08-034678 A to Sonoda et al.

72. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

73. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as a gel.

74. Sonoda et al. teach the use of a gel material for the purpose of taking advantage of its heat insulating properties and good mechanical strength (abstract).

75. It would have been obvious to one ordinary skill in the art at the time the Applicant's invention was made to have provided a gel material as the non-metallic, thermally insulative material in Freerks, Kaneko et al. and Kyogoku in order to take advantage of the materials heat insulating properties and good mechanical strength as taught by Sonoda et al.

76. Claims **100-101** are rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 95-96 and 99 above, and further in view of Japanese Patent Publication No. 2001-261375 to Sato et al.

77. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

78. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as porous or glass.

79. Sato et al. teach the use of a material comprising glass and which is porous for the purpose of obtaining a heat insulating material with excellent chemical resistance and excellent handleability suitable for use in semiconductor production (Japanese and Derwent abstracts).

80. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a material comprising glass and which is porous Freerks, Kaneko et al. and Kyogoku in order to obtain a heat insulating material suitable for use in semiconductor production as taught by Sato et al.

81. Claim **102** is rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 95-96 and 99 above, and further in view of U.S. Patent No. 5,626,936 to Alderman.

82. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

83. However, Freerks, Kaneko et al. and Kyogoku fail to teach the substantially non-metallic, thermally insulative material as at least two of solid, liquid and gas.

84. Alderman teaches the use of a construction material containing both liquid and solid phases for the purpose of avoiding exposure of an interior space from much higher or much lower temperatures of an exterior surface, thereby reducing the power requirements to maintain the desired temperature within the interior space (abstract).

85. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a two-phase, solid and liquid material as the non-metallic, thermally insulative material in Freerks, Kaneko et al. and Kyogoku in order to isolate two regions with differing temperatures, thus, reducing the power requirement to maintain a desired temperature in either of the regions as taught by Alderman.

86. Claim **103** is rejected under 35 U.S.C. 103(a) as being unpatentable Freerks, Kaneko et al. and Kyogoku as applied to claim 95-96 and 99 above, and further in view of U.S. Patent No. 6,045,620 to Tepman et al.

87. However, Freerks, Kaneko et al. and Kyogoku fail to teach a sealant channel comprising a sealant channel/o-ring groove peripherally surrounding the passageway.

88. Tepman et al. teach the use of a sealant channel/0-ring groove (Figures 5 and 6, 82; column 6, rows 2-5) on a substantially metallic insert (31) received within a passageway, the insert defining a substrate passageway there through, where the purpose of the sealant channel/o-ring groove is forming a seal between a process chamber and the metallic insert.

89. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a sealant channel/o-ring groove in Freerks, Kaneko et al. and Kyogoku in order to form a seal between a process chamber and a metallic insert as taught by Tepman et al.

90. Claims **104-106 and 108-109** are rejected under 35 U.S.C. 103(a) as being unpatentable over Freerks, Kaneko et al. and Kyogoku as applied to claims 95-96 and 99 above, and further in view of U.S. Patent No. 6,045,620 to Tepman et al. and U.S. Patent No. 4,289,061 to Emmett.

91. Freerks, Kaneko et al. and Kyogoku disclose the invention substantially as claimed and as described above.

92. However, Freerks, Kaneko et al. and Kyogoku fail to teach the interfacial structure comprising a plurality of openings for receiving load bearing plugs.

93. Tepman et al. teach the use of a plurality of openings and supplying a plurality of screws to those openings in order to attach the interfacial structure to a transfer chamber (column 5, rows 35-36).

94. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a plurality of openings and to have supplied a plurality of screws to those openings in Freerks, Kaneko et al. and Kyogoku in order to attach an interfacial structure to a transfer chamber as taught by Tepman et al.

95. Freerks, Kaneko et al., Kyogoku and Tepman disclose the invention substantially as claimed and as described above.

96. However, Freerks, Kaneko et al., Kyogoku and Tepman fail to teach the body comprising load bearing plugs within at least some of the openings in the thermally insulative material, the load bearing plugs having greater compression strength than the thermally insulative material and at least some of the load bearing plugs comprising holes extending therethrough which are sized to received mounting bolts.

97. Emmett teaches the use load bearing plugs (Figure 1, 2) including a hollow portion sized to receive mounting bolts (20) where the purpose of the hollow portion is to absorb a substantial amount of the total load applied by the plug (column 2, rows 41-49).

98. It would have been obvious to one of ordinary skill in art at the time the Applicant's invention was made to have provided at least some of load bearing plugs with a hollow portion in Freerks, Kaneko et al. and Tepman in order to absorb a substantial amount of the total load applied by the plug as taught by Emmett.

99. With respect to claim 105, Tepman teaches the use of entirely solid load bearing plugs/screws.

100. With respect to claim 106, as noted above, Emmett teaches the use of load bearing plugs including a hollow portion.

101. With respect to claim 108, the body of both Freerks and Tepman et al are substantially rectangular having outermost corners, at least four of said openings and load bearing plugs being respectively proximate the outermost corners of Tepman et al.

102. With respect to claim 109, said four load bearing plugs of Tepman et al. are solid.

Allowable Subject Matter

103. Claims 92 and 107 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

104. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach at least some of the load bearing plugs are entirely solid and at least some include a hollow portion. Further, not piece of properly combinable prior art was located that taught motivation for providing this feature in the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karla Moore
Patent Examiner
Art Unit 1763
April 18, 2005